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HOUSEKEEPERS' CHAT

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Thursday, February 4, 1937

(FOR BROADCAST USE ONLY)

Subject: "HALF-HEATED HOUSES." Information from the Bureau of Agricultural Engineering, U. S. Department of Agriculture.

--ooOoo--

Homemakers, this is going to be a distinctly cool conversation. I don't know that you need to get out your shoulder comforts, knee warmers, linsey-woolseys, paisley shawls, red flannels, or whatever your grandmothers wore in winter-time to keep warm, before people had central heating systems out in the country. But don't let the baby play on the floor while you tune in on this talk. In a few moments you'll see why I'm worried about the youngsters. My own feet complain very promptly when there's a cold draft along the floor, but you can't expect the baby to know why it's getting the "snuffles".

By the end of this chat I'm sure you'll want to buy a thermometer and try the temperatures in different rooms and at different points in each room. But nobody needs a thermometer to know that the lower layers of air in any room are usually colder than those at breathing level or higher. Just how much colder, may surprise you.

The Bureau of Agricultural Engineering of the U. S. Department of Agriculture recently cooperated with the University of Wisconsin in a study aimed at improving the comfort in farm homes. Of course Wisconsin winters are sometimes pretty severe and long. The houses investigated averaged eight and a half rooms each, but only five and four-tenths rooms were actually being used in winter. This included two and eight-tenths bed-rooms. Only 3 rooms in each house were heated. (You understand, of course, that these are averages; nine houses were picked for the study.)

These homes represented five types of construction, and varied in age from 16 to 82 years. Five were of typical wood frame construction. One was of brick, one of brick veneer, one of stone veneer, and one had a stucco exterior. In selecting the houses for testing the investigators wanted different types of construction, and they wanted to work with owners who were planning to make alterations or put in insulation so they could later compare the improvements with the original conditions.

One of the houses studied was heated by stoves only. Three had a combination of stoves and warm air furnace. Five had full central systems. The people living in the houses cooperated with the investigators by taking thermometer readings four times a day and recording outside weather conditions. The surface temperatures of the floors, walls, ceilings and windows were obtained. The temperature of the air at different levels in each room was taken, also air movement within the rooms and within the hollow spaces in the walls and ceilings, between studs and in joist spaces. These were also studied in attic and over unexcavated areas and in various other parts.

The really startling thing about the "cold comfort" in these houses was the variation of 10 to 20 degrees in the temperature of the same room at different heights from the floor. Then there was great fluctuation in the warmth of these supposedly heated rooms in the course of the day, and great differences in the temperature of different parts of the same room,- near the walls, near the stove, and so on.

Although some of these studies need to be repeated, they show very clearly some of the comfort-governing features of our rural homes. The great fluctuation during the day in the average living quarters should be looked into. It changes as much as 10 to 20 degrees. In other words, the farm family often has to adjust itself within a few hours, because of the weather and the kind of heating used, to temperature alterations as much as 20 degrees. The room that may be coaxed up to 70 by late afternoon may stay between 50 and 60 degrees for the greater part of the day.

Storm windows and storm doors are by no means generally used. If they were there would not be such variation in temperature at a given level throughout a room. It was found that while one side of a room might be comfortable, the other side might easily be 15 or 20 degrees colder. When rooms were not subject to drafts through outside openings or from other parts of the house (from halls and staircases especially) they were more uniformly heated.

Much heat is lost through floors and ceilings between a room that is heated and one above or below it that is not. Sometimes a ceiling carries cross drafts in its construction. The tests in these houses showed that the air from floor to ceiling was in layers of varying temperature. In one house this variation amounted to about 30 degrees, or 3 and three-quarters degrees per foot. And this was true throughout a number of tests conducted under varying weather conditions.

Fancy being a baby, playing on the floor in that house at, say, 50 degrees, and looking up,- probably sneezing and coughing - at your mother who is enjoying a normal temperature of about 69 degrees at "breathing level"! (You can figure this out for yourself - five times three and three-quarters.) Perhaps this is an extreme case. But the engineers say that in general, with existing construction methods, the difference may easily be 2 to 3 degrees per foot. If you were sitting down in such a room your whole body would be cold, and you'd be hunting for your arctics and your knee-warmers!

I used to wonder why medieval castles had so many tapestries and draperies hung on the walls. I suppose it was for decoration, instead of wall paper. But now I know that these covering on those stone walls made the occupants of the rooms warmer. The engineers say that cold walls and window surfaces influence comfort,- or, rather, discomfort,- very much. Particularly exterior walls. Floors over unexcavated portions of the house were found to be 20 degrees colder than the breathing or five-foot level. Occupants realized that comfort conditions in these typical farm houses were far from satisfactory. Since the survey, three of these have made considerable improvement by remodeling.

Such measures as installing storm windows and doors, increasing weather-stripping, and closing off drafty hallways, are relatively inexpensive means of increasing the warmth of a house.

